





by Michael Furtman

TRACK *What* DUCK

*What expanded banding efforts and new tracking technology **TEACH** us about Minnesota's **waterfowl**.*

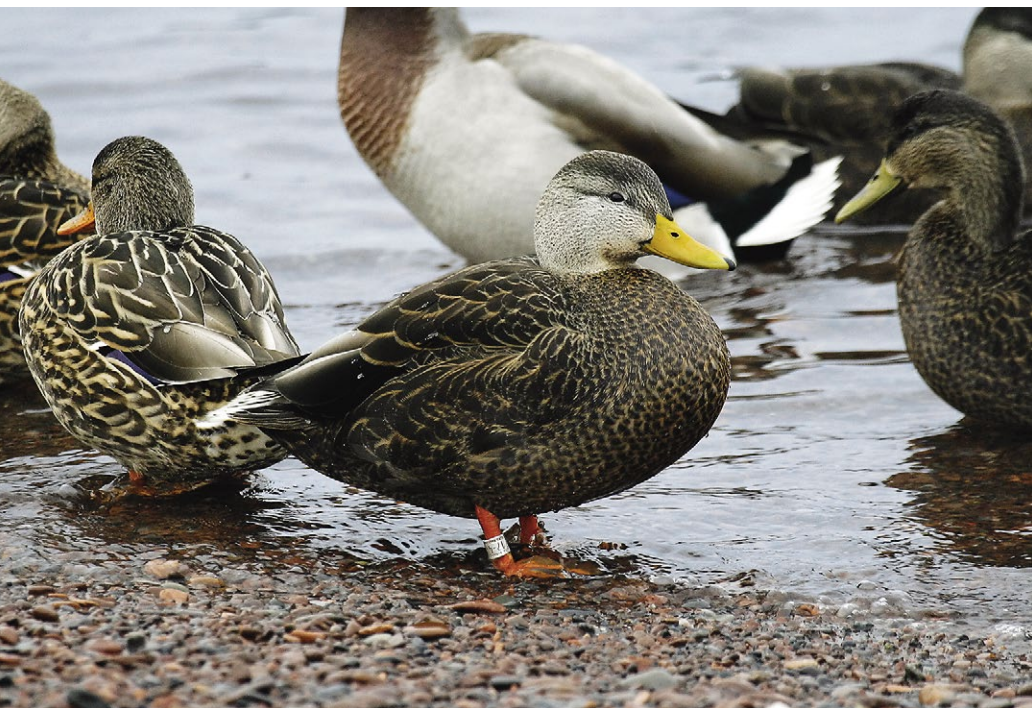
I SHOULD HAVE run right out and bought a lottery ticket.

Two shots. Two ducks. Two species. Both banded.

It was a slow day on that prairie pothole, with fair skies and light winds. Few ducks were moving. The only opportunities I had were on single ducks that came in to my decoys. The first was a mallard drake. When I felled the bird and my dog retrieved it, I was pleased to find that it sported an aluminum leg band. A half-hour later, a single pintail sailed in. I dropped it and found that it too was wearing jewelry. The odds of that double happening are so low that I know I will never be that lucky again.

A drake mallard with a band takes flight. The Minnesota DNR and the U.S. Fish and Wildlife Service band about 16 species of ducks every year.

BILL MARCHEL



An American black duck drone with a band stands on the shore of Lake Superior.

Duck hunters have considered the bagging of a banded duck a bonus since a federal program to track banding began in 1920 in North America. Not only is a band an uncommon sight, but when it's reported to wildlife authorities, the hunter is connected to continent-wide efforts to track duck movements and estimate their populations, which can inform conservation decisions and help wildlife managers set hunting regulations. In a newer high-tech twist, the Minnesota Department of Natural Resources has also been placing satellite-linked GPS units on mallards banded in the state, providing important information on habitat

use and the chronology of fall migration.

The banding program, a foundational element of North American waterfowl conservation, wouldn't work without hunter participation.

"When we put a band on a bird, that's in essence only half the data," says U.S. Fish and Wildlife Service biologist Pam Garretson. "Unless you get recoveries of some of your banded birds, you haven't really learned anything. One of the reasons that we generally know much more about game birds than nongame birds is that hunters harvest birds and report them."

EXPANDING EFFORTS

Since the DNR began banding ducks, which started as early as the 1930s, nearly all of it



has taken place in northwestern Minnesota. That changed in 2013, when the agency expanded banding to central and southern parts of the state. “We increased our efforts,” says Bruce Davis, DNR waterfowl research specialist, “because we wondered if we were getting an accurate picture of the harvest of locally produced ducks.”

Minnesota both produces and harvests a lot of ducks, so it’s important to know how or if hunters affect the reproductive success of local waterfowl populations. Davis now supervises four crews that band ducks in southwestern Minnesota near Madelia and Talcot Lake and Lac qui Parle in the west-central area. Duck banding in the traditional northern and northwestern areas continues as it has in

A scientist bands a juvenile mallard hen in Agassiz National Wildlife Refuge.

the past by both the DNR and the U.S. Fish and Wildlife Service staff of Agassiz National Wildlife Refuge.

“It’s a numbers game,” says Davis. “The more bands you get out there, the higher the number of returns. But that data returns to us slowly.”

Nearly all banding is done late in summer. When DNR or USFWS crews are banding Minnesota’s ducks, they record the bird’s species, whether it is a hatchling or an adult, and its sex (if determined). Then they send the bird on its way.

The DNR uses four methods of capture—rocket nets, swim-up traps, drive



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A rocket net is launched over baited waterfowl at Agassiz National Wildlife Refuge. Scientists wait in trucks in the distance to band the caught ducks.

traps, and night lighting. Rocket net traps, which were used as early as the 1940s, employ rockets to launch a large net up and over ducks, which have been lured onshore with grain as bait. Banding crews run out just after the net descends and before the struggling ducks can harm themselves. Then they place the birds in pens to await banding.

Swim-up traps use wire mesh in an oval

or funnel shape, anchored in shallow water, and also baited with grain placed on a floating platform. The ducks swim in but have difficulty exiting the funnel. They can rest on the portable loafing platform until the banders wade out.

For drive trapping, flightless ducks are herded into a net.

Some species, such as ring-necked ducks and common goldeneyes, rarely visit land or nest near waters too deep for swim-up traps. To capture these species, biologists in boats shine spotlights at night to confuse the birds, then scoop them up with dip nets.

Working in diverse habitats and using multiple capture methods means the DNR bands an impressive mixture of species.

“Because of where we’re located on the edge of the prairie, but also in the northern forest,” says Davis, “we have a much broader breadth to the species we’re banding.”

About 16 species are banded each year. Some are abundant and common, like wood ducks and mallards, but other dabblers frequently banded are pintails, black ducks, and both blue- and green-winged teal. The ring-necked is the diving duck most often banded, trailed by lesser scaup, redhead, and several species of mergansers.

GETTING ANSWERS

Hunters report banded birds at www.reportband.gov to the U.S. Geological Survey Bird

Banding Laboratory at the Patuxent Wildlife Research Center in Maryland. To determine the recovery rate for a waterfowl species, the researchers use the number of recovered birds and the number banded in a model. This is used to estimate the harvest rate, or the proportion of the species population harvested by hunters. Knowing the harvest rate enables wildlife managers to evaluate the impact of hunting regulation changes. For instance, in the 1980s when restrictive regulations were enacted, band reports revealed that the recovery rate and, thus, the harvest rate of mallards had decreased. In other words, the regulations were working.

On a continental scale, the most-banded duck is the mallard. Mallards top the list because they are the most common, and hunting regulations are primarily based



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A flock of redhead ducks flies over water near a commercial wild rice operation.

DECADES OF Ducks

The Bureau of Biological Survey (one of the precursors to the U.S. Fish and Wildlife Service) and the Canadian Wildlife Service started the first organized government banding program in 1920. After World War II the first large-scale,

organized waterfowl banding began. Today, the Bird Banding Laboratory of the U.S. Geological Survey manages the data, and all states and provinces use bands provided by this agency.

Since the 1960s, more than

19 million waterfowl have been banded in North America. More than 13 million have been ducks, and of those, approximately 6 million have been mallards. Nearly 3.7 million banded waterfowl have been recovered and reported.



A drake blue-winged teal touches down on a marsh in central Minnesota.

on mallard population assessment. The DNR's efforts also strongly slant toward mallards, but one objective of the expanded effort is to band significant numbers of wood ducks as well.

The DNR is striving to better understand the survival and harvest rates of Minnesota's ducks, says Davis. Banding can help answer various questions: What percentage of ducks produced in Minnesota are taken by hunters within the state? What percentage are taken by hunters outside of the state? How does the bird's age and its sex influence survival? How do changes in bag limits affect harvest?

Wood ducks are one species for which banding data is important for management purposes. Aerial surveys of the prairie pot-hole region give managers a good sense of population levels of many species that breed there, but wood ducks breed in much of the United States and southern Canada, outside the survey area. Wood-duck banding helps fill in that knowledge gap.

"A few years ago, the U.S. Fish and Wildlife Service increased the bag limit of wood ducks from two to three per day," Davis explains. "We questioned that decision and didn't raise our limit initially because of our concerns. The new banding effort will help answer those concerns."

From 1998 to 2007, when all states had a two-wood-duck bag limit, 40 percent of

harvested wood ducks were taken within our state. From 2008 to 2010, when other states opted for the three-bird limit but Minnesota stayed at two, we still took 32 percent of the harvested ducks. Since 2011, with all states allowing three wood ducks in the bag, 50 percent of the birds harvested were in Minnesota.

“Since 1996, 86,263 mallards have been banded in Minnesota,” says Davis. “From the band returns, we now know that our hunters take 3.5 percent of them, and just over 11 percent are taken down the flyway. Although not all bands are reported, to the best of our knowledge, the percentage of harvested banded ducks reflects the actual harvest of the population.”

Banding has also revealed vulnerability by age and sex. All ages and both sexes are banded, but not all fare the same. Because bag limits allow the take of more mallard drakes than hens, it’s not surprising that the harvest of females is lower. Of the 13,490 adult females banded in Minnesota during this period, hunters harvested 6.4 percent continent-wide. Of the 35,472 juvenile females, 8.7 percent ended up in the bag. The harvest rate for drake mallards banded as adults is about 11 percent, while juvenile males were taken with the greatest frequency at nearly 18 percent.

“We get a lot of information out of our

banding samples,” says Davis. “Things like survival and harvest rates, where the birds move to and where they’ve come from, and help in estimating population sizes. And it’s all dependent upon hunter participation.”

Once done by mail and phone, band recoveries are now reported exclusively online. “Citizen science is a buzzword,” says Garrettson of the USFWS. “But the fact is, by reporting waterfowl bands to the [USGS Bird Banding Laboratory], hunters have been citizen scientists for decades.”

MONITORING MIGRATION

A band return tells biologists where the banded duck ended up, but little about its movement or habitat use since the time it was banded.

To gain this information, the DNR is entering its third year of placing GPS tracking units on mallards. A tiny 11- or 15-gram unit fits on a duck’s back, held in place by a loop around its neck and one behind its wings to ensure the device doesn’t interfere with flight.

Though the DNR is tasked with setting season dates, little information was available on when “our” mallards left the state, how they moved about within the state, or what factors, such as weather or disturbance, contributed to their movements. Similarly, little was known about which habitats they

Duck YEARS

Banding allows biologists to determine the minimum age of recovered waterfowl. Here are the North American records for some of the longest-lived recovered species.

Greater scaup 20 years, 5 months
Northern pintail 22 years, 3 months
Wood duck 22 years, 6 months
Canvasback 22 years, 7 months
American black duck 26 years, 5 months
Mallard 27 years, 7 months
Canada goose 33 years, 3 months

MALLARDS BY MICHAEL FURTMAN



preferred while still in the state. Answers to those questions are trickling in, which will help managers better customize season dates and inform choices on where habitat work might be needed.

In 2016, around 120 mallards were outfitted with one of two different tracking units. Both stored data all season long. One needed to be recovered, like a leg band, to download the information. The second beamed the information in one final burst to a satellite. That second unit was modified and placed on 90 mallards for the 2017 tracking year. It beamed two locations per day throughout the hunting season, then every three days, then once per week until the battery died. During 2018, the final year of the study, another 60 ducks will carry this same type of unit.

“It’s not surprising that the final design yielded more data,” says Davis. “By not waiting until the end of the unit’s life to send the information, even those backpacks that fell off at some point, or were damaged, had already sent useful information.”

Although the study is not complete, some interesting details are already emerging. The two autumns examined had vastly different weather patterns. In 2016, autumn was unseasonably warm right through the duck season, and 80 percent of the tracked mallards remained in the state through early November. When freeze-up occurred almost simultaneously north to south in early December, roughly half of tracked mallards departed at once, with many of them flying nonstop to Illinois.

Autumn 2017 had more normal weather. With each successive cold snap, mallards from northern Minnesota gradually moved to the central, then southern parts of the state. As Davis puts it, “They basically walked

A flock of green-winged teal flies over a stand of phragmites.

their way out of the state.” As a result, that season was much better for hunters, providing opportunities throughout the state.

The DNR also learned that mallards in southern Minnesota used different habitats than those in the north. Northern zone mallards were more likely to use emergent wetlands, while the southern group used cropland more often than those in the north did.

“The data showing habitat use by time of the day is interesting,” says Davis. “It’s hard to separate human-influenced behavior [such as hunting pressure or other disturbance] from natural behavior, but what we’re seeing is significantly more use of croplands at night than during the day. That was a bit surprising.”

And for those hunters who thought their favorite wildlife management area doesn’t hold mallards, even some of those most heavily hunted were used by the birds as a refuge during the night.

More information will certainly be learned as the tracking and banding studies progress. Which brings me back to what I learned on my two-shot, two-band hunt. After reporting the band information, I learned that those ducks destined for my Minnesota dinner table had made vastly different journeys. The mallard had been banded as an adult near Green Bay, Wisconsin, and the pintail as a juvenile in central Alberta, Canada.

GPS tracking. Leg-band returns. Percentages and graphs. All necessary and interesting. But in the end, they are just a glimpse into the magic of the marsh and migration. Many mysteries remain, secrets only the ducks know. 